PATHOLOGY AND BACTERIOLOGY

UNDER THE CHARGE OF
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Studies on Crown Gall of Plants and its Relation to Human Cancer. —The author of this work, ERWIN SMITH (*Jour. Cancer Res.*, 1916, i, 231), has done very extensive work upon the bacteriology of plants. His particular interest has been to demonstrate the importance of certain bacterial infections to plant disease. In his investigations he has shown that many of the different blights, rots and wilts of plants are the result of bacterial invasion. Besides this he has also shown that specific parasites are capable of stimulating overgrowth of plant tissues causing hypertrophic masses to develop. Not only has he studied the pathological processes in spontaneous disease of plants but he has also reproduced them by experimental means. Two of the striking types of simple overgrowth have now become well known. These are found in the root nodules of the leguminosæ and the club-foot enlargements of the crucifers. In these pathological processes the individual cells of the tissues are stimulated to overgrowth and multiplication by the presence of bacteria lying in the cell interstices. The author believes that crown gall is a disease of plants which in its development and growth bears striking similarity to human cancer. Crown gall is a growth very common to a great variety of plants the world over. This tumorous growth shows cellular characters and types of nuclear division comparable to that of animal tumors. Metastases are produced by the extension of the growth along the vascular channels and by the migration of the causative agent to new areas. He believes that these tumors are to be differentiated from reactionary (inflammatory) processes in which the local cells respond for the purpose of healing. The effect of these tumor masses upon the remaining plant structure resembles in part the cachexia and anemia of animals. Smith has found that these plant tumors are the result of the presence of an intracellular infection which may be isolated and used to inoculate unaffected plants. Success has been obtained in these inoculation experiments and new tumors have arisen at the points of inoculation. These experimental tumors are similar to those of spontaneous origin. The organism causing this plant tumor is a schizomycete named B. tumefaciens. As this microörganism is killed at 37° C. its invasive properties of higher animals cannot be assumed. Attempts were made to reproduce in cold-blood animals tumor growths by the inoculation of this bacterium but no satisfactory results were obtained. The author believes that although no parasite has been demonstrated for animal tumors the analogy between the new growth in plants and animals suggests that the causative agents are similar.

Fetal Erythroblastosis.—Varying types and grades of edema are not uncommonly observed in the newborn. One type, congenital general edema, although not rare in its occurrence, has not been extensively commented upon. This form of congenital edema is usually seen in premature fetuses in which excessive fluid is found in the tissues of body cavities. This edema also involves the placenta and cord. The liver and spleen are enlarged and show numerous islands of myeloid cells and immature red cells and leukocytes. Various causes have been assigned for this congenital disease. Disturbances in the portal circulation, anomalies of heart, maternal nephritis and metabolic disturbance of the fetus have all been suggested as the active cause leading to this systemic disease. WOOLLEY (*Jour. Lab. and Clin. Med.*, 1916, i, 347) observed these characteristics in a case of congenital edema. The fetus was one of twins. He believed that the anasarca was the expression of the anemia resulting from disturbed production or increased destruction of erythrocytes. The pigmentation of the organs suggests an increased blood destruction. The low oxygen carriage of the impoverished blood diminishes metabolism and with it it is thought an accumulation of acids. The anasarca is, therefore, the expression of a severe grade of anemia. The author offers no suggestion for the origin of the anemia.

Experimental Arthritis in the Rabbit.—There has been much discussion upon the significance of various bacteria isolated from cases of arthritis and although experimental joint lesions have been obtained in animals little agreement is to be found in the interpretation of these results. The joint affections receiving greatest attention have been those associated with rheumatic fever. In this disease one or other of the types of Streptococcus viridans has been isolated. In carrying on inoculation experiments with these microörganisms joint lesions may be produced without, however, any degree of constancy which may be controlled. There are factors which appear to have a bearing upon the specific tissue infection which in part is related to the size of the inoculated dose, the virulence of the microörganism and the susceptibility of different tissues. That the latter condition plays an important part has often been suggested but very little experimental evidence has appeared to indicate the truth of the statement. FABER (*Jour. Exper. Med.*, 1915, xxii, 615) has brought forward a very interesting report upon a series of experiments in which the importance of a previous sensitization of tissues, particularly joints, rendering them more susceptible to an active infection and inflammation was shown. In these experiments rabbits were sensitized either by inoculating them intravenously with one or more doses, or by injecting dead cultures of streptococci into a joint. After a varying period of time an intravenous inoculation of the same living microörganisms was given. By the latter method a condition of sensitization was obtained so that it